Determinants of Fair Value Financial Instrument and Share-Based Payment Disclosure Patterns of Australian Listed Firms

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Abstract

This paper investigates the extent of mandatory Fair Value Financial Instrument Disclosures and Fair Value Share-Based Payment Disclosures in the first full year annual report prepared in accordance with the International Financial Reporting Standards of the top 100 Australian listed companies. The results demonstrate that internationalisation is a factor which is significantly and positively associated with fair value share-based payment disclosure patterns and the strength of corporate governance structure and leverage are positively and significantly associated with fair value financial instrument disclosure patterns. This paper contributes to an understanding of the extent and rationale behind Australian listed firms' fair value disclosure practices.

Introduction

The Financial Reporting Council announced on 3 July 2002 that Australia would formally adopt the International Financial Reporting Standards (IFRS) for reporting periods commencing on or after 1 January 2005 (Financial Reporting Council, 2005). Post-IFRS adoption, fair value[1] recognition, measurement and disclosure of transactions and events are required under several accounting standards including: AASB 132 and AASB 139 which deal with financial instruments (derivatives, hedge accounting, available-for-sale instruments); AASB 2 Share-Based Payments where shares, share options and equity instruments are determined by reference to fair value; AASB 140 Investment Property where entities can choose between the cost model or fair value model; AASB 138 Intangible Assets where entities measure the fair value of intangible assets acquired in a business combination; and AASB 116 Property, Plant and Equipment where an entity can choose between the cost model and fair value model. Whilst modified historical cost accounting did prevail pre-IFRS (Ernst & Young, 2005), fair value measurement and recognition was permissible under some accounting standards (e.g., AASB 116 and AASB 138). Fair value accounting choices

under these standards were no different in a post-IFRS environment relative to the pre-IFRS environment.

Fair value measurement attempts to measure financial statement elements at their market value and hence is considered to provide information that is more relevant to users. However, the other objectives of financial statements, namely understandability, reliability and comparability, are achievable only if the meaning of fair value is both clear and unambiguous. In the absence of an active market, fair value must be estimated and this can lead to less reliable information since managers may use their discretion to manipulate accounting information (Hodder *et al.*, 2006). There are various assumptions, valuation models, valuation techniques and inputs to valuation models that are available to managers when measuring fair value. The accounting standards do not require use of a particular valuation model to measure fair value, but do mandate disclosure of the model used, significant assumptions and inputs used in those models. Further, each standard has its own specific means of identifying fair value when measuring certain assets at fair value, leading to the issue that fair value of assets in the balance sheet will differ as a consequence of the accounting standard itself and the underlying methods and assumptions. Potentially, fair value measurement and recognition may diminish understandability, reliability and comparability of the financial statements while adding unnecessary complexity and increasing the cost of financial reporting (Holzmann & Robinson, 2007). A critical part of fair value determination is the disclosure requirements of fair value (Barth & Landsman, 1995; Holzmann & Robinson, 2007).

This paper investigates the extent of Fair Value Financial Instrument Disclosures (FVDI-FI) and Fair Value Share-Based Payment Disclosures (FVDI-SP) within the annual reports of the top 100 (by market capitalisation) companies listed on the Australian Stock Exchange (ASX). The paper focused on share-based payment and financial instrument fair value disclosures because of the changes to the relevant accounting standards or the introduction of new standards relating to these attributes in the immediate post-IFRS adoption period. Firm management would require an understanding of the processes and valuation inputs involved in the use, measurement and disclosure of these instruments. Failure to understand the nature of share-based payments or financial instruments could potentially lead to a negative impact on earnings (Ernst & Young, 2005).

The next section outlines the research questions and significance of the study. Section three covers the theoretical position of the study and hypotheses development and section four discusses the research approach. Section five provides the results of the empirical analysis while section six concludes the study.

Research Questions and Significance

The fair value of assets and liabilities are recognised in the balance sheet with income and expenses determined by reference to increases and decreases in the fair

value of these assets and liabilities (Ernst & Young, 2005). New assets and liabilities will be recognised, derecognised or impaired under IFRS. This has the potential to create volatility in the balance sheet and income statement which in turn may impact on existing debt covenant requirements, credit ratings and ability to restructure existing loans or obtain new financing (Taylor, Tower & Neilson, 2007). Therefore, it is important that companies disclose sufficient information relating to fair value accounting to enable users to make informed economic decisions.

This paper will assist in determining the extent of fair value information in relation to financial instruments and share-based payment disclosure communication. This is important as there are capital management implications arising from the hedge accounting rules under IFRS. Disclosure of the unrealised losses of hedging instruments at fair value is now required under AASB 139 and AASB 132. This disclosure forces management and the board of directors to examine the potential impact of these on the ability to raise further capital and/or continue as a going concern or, more generally, to achieve the business objectives of the firm. Communication of fair value information within the annual report is of particular importance as it assists users in determining an entity's overall financial position and associated risks. For instance, fair value reflects the judgment of management concerning the present value of expected future cash flows relating to a financial instrument and permits comparisons of financial instruments with substantially the same economic characteristics (Rayman, 2007; Taylor, Tower & Neilson, 2007). Communication of fair value information in respect of share-based payments provides important information about equity-based compensation schemes and the achievement of performance hurdles for directors and executives (Kasznik, Barth & Aboody, 2004).

Management of Australian listed firms will be required to use their judgement concerning valuations when determining the fair value of assets and liabilities. Fair value methodologies may be a significant issue where there is no liquid market for the relevant instrument. Management will have to use their discretion when choosing the appropriate method to calculate the fair value of assets and liabilities and changes in the fair value of these assets and liabilities (Ernst & Young, 2005; Ronen, 2008). Consequently, there can be considerable diversity in the measurement and disclosure of fair value techniques, methods, assumptions or judgments, sources of data, valuation inputs, sensitivity analyses and reliability of fair value estimates.

There has been considerable debate concerning the fair value measurement of financial instruments. For instance, Horton and Macve (2000) stated that fair value measurement of financial instruments 'has the potential to fundamentally undermine' (p. 26) conventional current value accounting treatment of those instruments and is conceptually flawed. Olbrich and Broese (2006), Hitz (2007) and Whittington (2008) provide some justification for this stance taken by Horton and Macve (2000). Olbrich and Broese (2006) have found that while there is decision relevance for application of

fair value accounting, fair value measurement is theoretically restricted in its validity and applicability.

Chalmers and Godfrey (2000) investigated the diversity in hedge accounting policy choices and hedge accounting disclosure, recognition and measurement practices in relation to financial instruments. Using AASB 1033 Financial Instruments: Presentation and Disclosure as a guide, Chalmers and Godfrey (2000) found that firms disclosed very little information relating to their hedge accounting policies and net fair value methodology. Many of the disclosures relating to derivative instrument information were vague and failed in terms of contributing to the overall understandability, comparability and consistency of the body of information within the annual report and would, therefore, be unlikely to assist users in making informed economic decisions. Chalmers and Godfrey concluded that the disclosures (including fair value disclosures) requirements in respect to hedge accounting under AASB 1033 were too general and that more specific accounting policy disclosures relating to specific types of instruments and incompleteness in fair value disclosures were required. Chalmers and Godfrey (2004) then demonstrated that firms voluntarily disclosed more derivative instrument information as greater pressure was exerted through compliance with professional norms and by institutions. It was also found that firm leverage was significantly positively associated with firm disclosures.

The method by which Australian companies recognise, measure and disclose information relating to their hedging arrangements changed significantly with the introduction of IFRS. AASB 132[2] Financial Instruments: Disclosure and Presentation and AASB 139 Financial Instruments: Recognition and Measurement mandate[3] measurement of virtually all financial instruments at fair value which is determined on a mark-to-market basis (AASB, 2004a, 2004b). Management need to use discretion when choosing the appropriate method to calculate the fair value of the hedged item and hedging instrument. There are four major areas of disclosure in respect to fair value measurement of financial assets and financial liabilities mandated under AASB 132. These are: a) methods and significant assumptions applied in determining fair value, b) whether fair values of financial assets and financial liabilities are determined directly by reference to published price quotations in an active market or are estimated using a valuation technique, c) whether fair value of financial instruments are determined using a valuation technique based on assumptions that are not supported by observable market data, and d) the total amount of the change in fair value estimated using a valuation technique that was recognised in profit and loss during the period (AASB, 2004a, 2004b).

The relevant accounting standard that deals with share-based payments in Australia is AASB 2 Share-Based Payments, effective for reporting periods on or after 1 January 2005 (AASB, 2007). Although AASB 2 offers some guidance on the features of a share-based payment transaction that should be taken into account, the standard refrains from providing specific details on how they should be valued (Gray, 2006). Rather, AASB 2 requires the use of a valuation technique consistent with generally

accepted valuation methodologies for pricing share-based payments. AASB 2, paragraph 47 clearly requires: a) disclosures on the methods and the assumptions applied relating to interest rates or discount rates, b) the valuation technique used, c) inputs to the model including weighted average share prices, exercise prices, expected volatility, option life, expected dividends, the risk-free rate and d) the total amount of the change in fair value estimated using such a valuation technique.

Bassett, Koh and Tutticci (2007) examined the role of corporate governance in influencing employee stock option (ESO) disclosures of Australian listed firms following the revision of AASB 1028 Employee Benefits in 2001. They found that external auditor quality (i.e., Big 4 auditor) is positively and significantly associated with mandatory and voluntary ESO disclosure and the dual role of the CEO and chairperson of the board is associated with lower levels of mandatory disclosure. The reason provided by Bassett *et al.* (2007) for this association is that firms will provide more extensive ESO disclosures to maintain a reputation for financial reporting integrity and that disclosure benefits (such as a positive market view, confirmation of firm value and reduction of agency costs) exceed disclosure costs. They also found that firms cross-listed on the US stock exchange provided more extensive ESO disclosures at the one percent level across all models tested. Bassett *et al.* (2007) proposed that this association relates to greater scrutiny of executive compensation packages by regulators of both the Australian and US stock exchanges. The findings of Bassett *et al.* (2007) are supported by the work of Liu and Taylor (2008) who found that the extent of voluntary disclosure of rights, options and employee termination benefits of 191 Australian listed firms is positively and significantly associated with corporate governance structure.

Adoption of fair value measurement, recognition and disclosure in Australia and globally has been a focus of concern amongst accounting standard-setters, auditors, investors and company management (Ernst & Young, 2005; Gray, 2006; Hitz, 2007; Holzmann & Robinson, 2007; Whittington, 2008). This research is motivated by the importance of fair value-based reporting issues. An analysis of the fair value disclosure issues in respect of financial instruments and share-based payments of Australian listed firms provides us with an insight into the difficulty or concerns that firms may be experiencing with fair value measurement issues. Further, because of the inherent subjectivity in determining fair values, particularly in the absence of an active market or where extensive assumptions are required to determine fair values, this study provides an insight into managerial disclosure incentives relating to fair value reporting (Holzmann & Robinson, 2007).

This paper contributes to our knowledge of fair value accounting through an examination of fair value disclosures of the top (by market capitalisation) 100 Australian listed companies. Specifically this study examines the extent of disclosures of fair value methods, assumptions and inputs and their association with firm size, industry and strength of corporate governance structure. The findings assist in determining the factors that are likely to influence the selection of fair value valuation

methods by firm management. There are a number of policy implications arising from this research. Results suggest the application of fair value accounting should be accompanied by far greater disclosure to enable users to make informed economic decisions.

Hypotheses Development

This study will examine the extent of information disclosed relating to fair value measurement of financial instruments and share-based payments by the top 100 Australian listed companies. Importantly, information concerning the quantum of fair value changes to assets and liabilities, the impact of these changes on the balance sheet and income statement, valuation techniques, methods and assumptions will need to be disclosed in the annual financial report.

The motivation to disclose fair value information is explained by using agency theory arguments whereby many determinants of disclosure patterns are driven by economic considerations (Watts & Zimmerman, 1990; Emanuel, Wong & Wong, 2003; Liang, 2004; Cheng & Warfield, 2005). Agency theory provides a theoretical framework for examining fair value disclosures by Australian listed firms. Since management have discretion in selecting the method, technique and inputs when calculating fair values, the method, technique and inputs that will enhance their own personal utility or welfare may consequently be selected. The disclosure requirement of fair value information imposed by the relevant accounting standard underpins the costs associated with agency monitoring initiatives as discussed by Jenson and Meckling (1976).

Corporate governance is concerned with optimally reducing managerial opportunistic behaviour. Agency theorists suggest that there are internal and external governance mechanisms designed to limit agency costs arising from the self-serving activities of managers. The corporate governance best practice principles and recommendations developed by the ASX Corporate Governance Council (2003, 2007) constitute a mechanism to ameliorate agency problems in shareholder-manager relationships. Transparency relating to corporate governance attributes serves to minimise agency conflicts between shareholders and managers that are inherent in the separation of ownership and control of firms (Jensen & Meckling, 1976; Beekes & Brown, 2006). Firms with effective systems, processes, policies and tools in place in relation to corporate governance are therefore expected to disclose more fair value information. It is hypothesised that the extent of fair value information disclosed is positively related to the strength of the corporate governance structure of the firm. To formally test the association between the strength of governance structure and the extent of fair value disclosures, the following hypothesis was constructed:

H1: *There is a positive association between the strength of corporate governance structure and the extent of fair value disclosures by the top 100 Australian listed firms.*

Prior research has generally shown that larger companies tend to disclose more information. Using 2,473 corporate annual reports examined within 29 disclosure studies conducted between 1968 and 1997, Ahmed and Courtis (2002) found a significant and positive association between firm size and disclosure levels despite a high degree of variability across the results. In contrast, Malone, Fries and Jones (1993) found that the extent of disclosure of financial information by oil and gas firms was not significantly associated with firm size, as measured by a firm's total assets. Watson, Shrives and Marston (2002) concluded that smaller companies incur higher costs for voluntarily disclosing information, in terms of the cost of collecting and disclosing data and information as well as the potential costs relating to loss of competitive edge resulting from the release of proprietary information. Jones and Higgins (2006) found that larger firms tend to have greater knowledge of IFRS implementation issues and have potentially greater accounting adjustments and technical challenges associated with IFRS implementation than smaller firms. They found a statistically significant association between managements' knowledge of IFRS adoption issues and firm size, rationalising that larger firms were more likely to devote greater time and resources to IFRS adoption requirements than smaller firms. Consequently, larger firms may disclose more information in their annual reports. The size of the firm was measured as the natural logarithm of total assets to reduce the impact of skewed data in the statistical analysis. This measurement basis is consistent with that used in extant literature (e.g., Anderson, Mansi & Reeb, 2004).

To formally test the association between firm size and the extent of fair value disclosures, the following hypothesis was constructed:

H2: *There is a positive association between firm size and the extent of fair value disclosures by the top 100 Australian listed firms.*

Previous research (e.g., Beasley *et al.*, 2000; Watson *et al.*, 2002) has shown that firms' reporting disclosures are likely to be correlated with industry classification. Fair value information may not be disclosed owing to the commercial sensitivity of that information for firms. Alternatively, information may be disclosed to reduce negative perceptions relating to risk. For instance, companies belonging to the resources, utilities and financial services sectors commonly use financial instruments to fund acquisitions and raise capital. Fair value measurement of financial instruments may potentially have a significant impact on financial statement elements which may in turn influence managerial disclosure incentives. Industry is included as an independent variable to defend the possibility of differences in fair value disclosures occurring between firms belonging to different industries.

To formally test the association between industry and the extent of fair value disclosures, the following hypothesis was constructed:

H3: *There is an association between industry of the firm and the extent of fair value disclosures by the top 100 Australian listed firms.*

Research Method

Hypotheses testing used data derived from the first full year 2006 annual report prepared and presented under IFRS by the top 100 Australian listed companies by market capitalisation. The larger listed companies are economically the most important and more likely to have made significant accounting adjustments in relation to fair value measurement requirements. These companies are also more likely to follow best practice in relation to mandated disclosure requirements as they have access to greater resources. A potential drawback is that the results of this analysis may not be extrapolated to smaller Australian listed firms.

A separate dependent variable was derived for both share-based payment fair value disclosures and financial instrument fair value disclosures. The dependent variable in both cases consists of a disclosure index, each being a proxy measure of the extent of fair value disclosure. A disclosure score is separately computed for financial instruments and share-based payment fair value information by summing all information items disclosed divided by the maximum number of items (12) that could be disclosed. They are referred to as the Fair Value Disclosure Index - Share-Based Payments (FVDI-SP) and the Fair Value Disclosure Index - Financial Instruments (FVDI-FI). The items comprising FVDI-SP and FVDI-FI are provided in the Appendix.

For FVDI-SP, the 12 attributes included in the index are method, valuation technique, inputs comprising exercise price, expected life, current market price of the underlying shares, expected volatility, expected dividends, risk-free interest rate, market-based performance hurdles, fair value information sources, fair value quantity changes and assumptions. These attributes were included in the index FVDI-SP based on the IFRS requirement for fair value disclosures in relation to share-based payments (AASB 2). The presence of each attribute in a company's annual report was scored as one (1) for that attribute, otherwise zero (0). The 12 attributes included in FVDI-FI are method, valuation technique, inputs comprising interest rates, credit risk, foreign exchange prices, commodity prices and equity prices, volatility, costs/premiums/fees/discounts, source, fair value quantity changes and assumptions. Items of information that comprise the disclosure index are considered applicable to all companies in the sample. The issue of applicability of disclosure to all sample companies has been largely overcome by focussing on the top 100 companies. The top 100 companies are more likely to have an extensive array of financial instruments and share-based payments requiring fair value disclosures.

Firm size was measured as the natural log of total assets to remove the influence of skewed data. Sample companies were allocated to a particular industry group based on the ASX Global Industry Classification Standard (GICS) scheme. A total of 21 different industry types were recorded for the top 100 Australian listed companies. Sample firms were then classified into ten *sectors* based on the GICS classification. Further, the ten industry sectors were categorised into three broad groups based on

the nature of the principle business activities: heavy industry, light industry and financials. The largest industry sector is industrials which consists of 23 companies followed by the materials sector with 20 companies. In relation to the three broad industry groups, there are 57 companies in the heavy industry, 27 in the light industry and 17 financials.[4] Gallery, Cooper and Sweeting (2008) found that pre-IFRS adoption disclosure quality under AASB 1047 Disclosing the Impacts of Adopting Australian Equivalents to International Financial Reporting Standards was significantly associated with the size, industry and profitability of Australian listed firms.

Five corporate governance variables are derived from the ASX Council's corporate governance best practice principles and recommendations to construct a measure of the strength of the corporate governance structure of a firm (ASX Corporate Governance Council, 2003, 2007). These governance principles and recommendations provide an objective source from which to measure the construct. Further, extant literature (Gul & Leung, 2004; Mallin *et al.*, 2004; Beekes & Brown, 2006; Kang, Cheng & Gray, 2007) demonstrates that better governed firms make more informative disclosures. The five attributes that comprise the independent corporate governance score (CGS) are:

CG1: Is the chairperson of the board an independent director?

CG2: Are roles of the chairperson and chief executive officer performed by different persons?

CG3: Has the CEO/CFO stated that the company's risk management system is operating effectively and efficiently?

CG4: Does the company have an audit committee charter?

CG5: Does the company have a formal written continuous disclosure policy?

These five corporate governance attributes were followed from the model of corporate governance utilised by Taylor *et al.* (2008). The presence of each attribute in the company's annual report was scored as one (1) for that attribute, otherwise zero (0). A firm receives a percentage CGS depending on the number of conditions satisfied. CGS is treated as a continuous variable in the statistical analysis. The average score is used as a proxy for the strength of corporate governance of each company.

Three control variables were included in the statistical analysis. These are firm leverage, profit before tax and level of internationalisation. Leverage is measured as total liabilities divided by total assets. Jensen and Meckling (1976) and Watson *et al.* (2002) found that more highly leveraged firms incur more monitoring costs and will seek to reduce these costs by disclosing more information within annual reports. Profit before tax was obtained directly from the companies' annual reports. Malone *et al.* (1993) and Watson *et al.* (2002) suggested that firm management might be willing to disclose more information with higher earnings to support management compensation contracts and to assure investors of the profitability of the firm. Higher costs of

disclosure are also justified with higher levels of earnings. Degree of internationalisation is measured as the percentage of three attributes: overseas listing, overseas operations and the presence of a foreign subsidiary.[5] Firms with international operations are likely to be exposed to greater financial instrument risks and investor pressures than firms with purely domestic operations.[6] Overseas listing status may also have an important influence on disclosure practices because of regulatory differences across jurisdictions and associated differences in disclosure requirements and shareholder scrutiny. Ahmed and Courtis (1999), for example, analysed associations between corporate characteristics and disclosures within annual reports using disclosure studies between 1968 and 1997. They found that listing status was significantly and positively associated with disclosure levels with a mean correlation of 0.37. Leverage and internationalisation are normally distributed while profit before tax shows a normal distribution after taking the natural log.

Results

Univariate Results

Descriptive statistics provided as Table 1 indicate that the mean disclosure of fair value information relating to share-based payments, as measured by FVDI-SP, is 65.7 percent and the mean fair value disclosure relating to financial instruments, as measured by FVDI-FI, is 49.17 percent. Further, the standard deviation of FVDI-SP is 27.1 percent, which is relatively high, suggesting there is considerable fluctuation regarding the disclosure of share-based payments between sample firms. This result relates directly to the diversity of share-based payment arrangements including differences in share plans, option plans and rights plans and use of a diverse suite of methods and techniques when estimating fair value of share-based payments. The extent of disclosure of financial instrument fair value information is correspondingly diverse. The standard deviation of FVDI-FI is 14.19 percent. The lower mean FVDI-FI indicates that sample companies tend to disclose less and only basic fair value information in relation to financial instruments. Sample firms generally exhibit a strong corporate governance structure, based on the CGS, with a mean of 86.60 percent, mean leverage of 55.80 percent, mean internationalisation level of 64.7 percent and mean profit before tax of 12.42 percent.

The disclosure frequency of the 12 individual items that comprise each of FVDI-SP and FVDI-FI is shown in Table 2. Also shown in Table 2 is the frequency disclosure of different valuation techniques that companies use to determine fair values. Top 100 companies frequently disclose information relating to fair value methodologies and valuation techniques for both FVDI-SP (92.63% and 77.00% respectively) and FVDI-FI (93.75% and 91.67% respectively). The disclosure frequency of any valuation input used to determine fair values for FVDI-SP and FVDI-FI is 67.00 percent and 76.04 percent respectively. Disclosure frequency of significant assumptions used in determination of fair values for FVDI-SP and FVDI-FI is 76.00 percent and 92.71 percent respectively. However, disclosure of discrete

inputs to valuation models is highly variable, ranging from 39 percent (life or term of option) to 57 percent (risk free rate and volatility) in the case of share-based payments and 8.33 percent (costs/premiums/discounts) to 64.58 percent (interest rates) in the case of financial instruments. There was a paucity of disclosure of the independent third parties used in the determination of fair values with zero percent for financial instruments and 18 percent for share-based payments. Quantification of fair value changes in respect of financial instruments was relatively low at 37.50 percent. This compares to disclosure of fair value quantification changes for share-based payments of 75 percent.[7] These results suggest that disclosure of important information regarding fair valuation inputs and independent valuation sources within the annual financial reports of top 100 ASX listed companies are weak to moderate at best. This could potentially pose a problem for sophisticated stakeholder groups such as analysts and institutional investors who tend to use these data to derive their own fair value models.

Table 1: Descriptive Statistics for all Sample Firms

	FVDI-SP	FVDI-FI	CGS	Size	Internation-alisation	Leverage	Profit before tax
Mean	0.583	0.492	0.866	15.538	0.647	0.558	12.423
Standard Error	0.031	0.014	0.017	0.152	0.035	0.020	0.311
Median	0.708	0.500	1.000	15.512	0.667	0.545	12.875
Standard Deviation	0.315	0.142	0.173	1.525	0.348	0.197	3.112
Kurtosis	-1.146	0.602	1.445	1.029	-0.571	-0.265	10.687
Skewness	-0.501	-0.781	-1.273	0.727	-0.751	0.399	-3.143
Range	1.000	0.750	0.800	8.014	1.000	0.810	16.754
Minimum	0.000	0.083	0.200	11.985	0.000	0.157	0.000
Maximum	1.000	0.833	1.000	19.999	1.000	0.967	16.754
Count	100	100	100	100	100	100	100
Confidence Level (95.0%)	0.062	0.028	0.034	0.303	0.069	0.039	0.618

Source: Original table.

Note: Descriptive statistics of sample firms: FVDI-SP = fair value share-based payment disclosure index; FVDI-FI = fair value financial instrument disclosure index; CGS = corporate governance score, size is measured as the natural log of total assets, control variables are leverage = total liabilities/total assets, internationalisation is measured as the percentage of three attributes (overseas listing, overseas operations and the presence of a foreign subsidiary), profit before tax is measured as the natural log of pre-tax profit.

ANOVA tests were run for industry sectors and industry groups in order to determine whether the differences in mean share-based payment and financial instrument fair value disclosures between various industries are statistically significant (Table 3). Mean FVDI-SP ranged from 22.19 percent (utilities) to 83.33 percent (telecommunications) between industry sectors. Mean FVDI-FI ranged from 43.51

percent (energy) to 58.33 percent (information technology, telecommunications and utilities) between industry sectors. Mean FVDI-SP is significantly different between industry sectors (p value = 0.000). In respect of industry groups, there is a statistically significant difference in mean FVDI-SP (p value = 0.060). Firms belonging to different industry sectors and industry groups have significantly different fair value share-based payment disclosures owing to the different methods and techniques used by these companies when estimating fair values and consequently associated disclosure levels differ. Mean FVDI-FI is not significantly different between industry sectors or industry groups. A possible reason for this is that firms were using the same or similar models to value financial instruments and hence a more uniform level of disclosures around fair value estimation was made in the study year.

Table 2: Frequency Disclosure of Attributes Comprising FVDI-SP & FVDI-FI

FVDI-SP Attributes	Freq. %	FVDI-FI Attributes	Freq. %
1) Fair Value Methodology	92.63	1) Fair Value Methodology	93.75
Mark-to-Market	92.63	*Mark-to-Market*	93.75
Estimate	83.87	2) *Valuation Technique*	91.67
2) Valuation Technique	77.00	*Market Values*	90.63
Discounted Cash Flows	2.00	*Recent Arms Length Transactions*	8.33
Monte Carlo Option Pricing Model	29.00	*Similar Transactions*	69.79
Black Scholes Option Pricing Model	35.00	*Discounted Cash Flows*	84.38
Binomial Option Pricing Model	31.00	*Option Pricing Model*	6.25
Net Present Value	1.00	*Valuation Inputs (av. of all inputs)*	76.04
Valuation Inputs (av. of all inputs)	67.00	3) Interest Rates	64.58
3) Exercise Price	47.00	4) Credit Risk	47.92
4) Life or Term of Option	39.00	5) Foreign Exchange Prices	61.46
5) Current Share Price	44.00	6) Commodity Prices	36.46
6) Volatility	57.00	7) Equity Prices	29.17
7) Dividends	54.00	8) Volatility	50.00
8) Risk Free Rate	57.00	9) Costs/Premiums/Discounts	8.33
9) Performance Hurdles	48.00	10) Source of Valuation	0.00
10) Source of Valuation	18.00	11) Fair Value Quantify Changes	37.50
11) Fair Value Quantify Changes	75.00	12) Assumptions	92.71
12) Assumptions	76.00		

Source: Original table.

Note: Frequency disclosure of each of the 12 individual items that comprise the disclosure indices: Fair Value Disclosure Index-Share-Based Payment (FVDI-SP) and Fair Value Disclosure Index-

Financial Instruments (FVDI-FI). Also shown is the frequency disclosure of the different valuation techniques which are available to companies to calculate or estimate fair values.

Table 3: ANOVA Statistics Based on Industry Sector and Industry Groups

Panel A		FVDI-SP		FVDI-FI	
Industry Sectors	*Count*	*Average*	*Variance*	*Average*	*Variance*
Energy	9	52.778	9.375	43.519	2.218
Materials	20	70.417	5.444	47.083	2.505
Industrial	23	32.609	8.959	51.812	1.260
Consumer Discretionary	13	71.795	5.618	50.000	1.852
Consumer Staples	7	59.524	13.757	54.762	0.893
Health Care	4	72.917	6.192	45.833	1.157
Financials	17	72.059	7.113	45.098	3.564
Information Technology	1	75.000	0.000	58.333	0.000
Telecommunications	2	83.333	1.389	58.333	1.389
Utilities	4	22.917	2.951	58.333	0.000
	Summary	F Statistic	4.697	F Statistic	0.919
		p-value	0.000*	p-value	0.513

Panel B		FVDI-SP		FVDI-FI	
Industry Sectors	*Count*	*Average*	*Variance*	*Average*	*Variance*
Heavy Industrial	57	52.485	10.391	48.538	1.962
Light Industrial	26	62.179	9.235	53.205	1.004
Financial	17	72.059	7.113	45.098	3.564
	Summary	F Statistic	2.898	F Statistic	1.839
		p-value	0.060***	p-value	0.165

Source: Original table.

Note: * and *** are statistically significant at the 1% and 10% levels respectively.

Table 3 (above) provides ANOVA statistics for industry sectors (Panel A) and industry groups (Panel B) designed to test if there are significant differences in mean fair Value Disclosure Index-Share-Based Payment (FVDI-SP) and Fair Value Disclosure Index-Financial Instruments (FVDI-FI).

Pearson's product-moment correlations between FVDI-FI and FVDI-SP and each of the independent and control variables are provided in Table 4. The correlations between share-based payment fair value disclosures and leverage (0.268) and internationalisation (0.256) are statistically significant at the ten percent level. In the case of financial instruments, there is a positive and statistically significant correlation between the extent of fair value disclosures and strength of corporate governance, as measured by CGS (0.311). Leverage is also weakly correlated with FVDI-FI (0.231). There is no significant association between firm size, industry and

FVDI-FI. Multicollinearity is not a concern as the correlation coefficients between the independent and control variables are all less than 0.8 (Cooper & Schindler, 2006).

Table 4: Pearson Correlation Matrix for all Sample Firms

	FVDI-SP	FVDI-FI	CGS	Size	Internation-alisation	Leverage	Profit Before Tax	Industry Sectors
FVDI-SP	1.000							
FVDI-FI	-0.028	1.000						
CGS	0.068	0.311*	1.000					
Size	0.179	0.157	0.008	1.000				
Internationalisation	0.256**	0.179***	0.011	0.215	1.000			
Leverage	0.268**	0.231**	0.252**	0.548*	0.134	1.000		
Profit Before Tax	-0.020	0.192	0.004	0.545*	0.014	0.091	1.000	
Industry Sectors	0.074	0.098	-0.105	0.340*	-0.150	0.403*	0.110	1.000

Source: Original table.

Note: Associations *, ** and *** are statistically significant at the 1%, 5% and 105% levels respectively. FVDI-SP = fair value share-based payment disclosure index; FVDI-FI = fair value financial instrument disclosure index; CGS = corporate governance score, size is measured as the natural log of total assets, control variables are leverage = total liabilities/total assets, internationalisation is measured as the percentage of three attributes (overseas listing, overseas operations and the presence of a foreign subsidiary), profit before tax is measured as the natural log of pre-tax profit, industry sectors comprise 10 GICS industry sectors.

Multivariate Results

Multivariate analysis using ordinary least square regressions (OLS) is performed to test the association between each of the dependent variables FVDI-SP and FVDI-FI and the independent variables and the control variables. The results are provided in Table 5. Estimates of the following model were obtained for each of FVDI-SP and FVDI-FI:

FVDI-SP(FI)$jt = αj + β1$ CGS$jt + β2$ Sizejt +/- $β3$ Industry Group$jt + β4$ Leverage$jt +$ $β5$ Internationalisation$jt + β6$ Profit before tax$jt + εj$
Where:

Dependent Variable:
➢ FVDI-SP(FI)jt = *Fair Value Disclosure Index in relation to share-based payments (SP) or alternatively financial instruments (FI) for firm j in year t*

Independent Variables:
➢ *CGSjt = corporate governance composite score for firm j in year t*
➢ *Sizejt = natural log of total assets for firm j in year t*
➢ *Industry Groupjt = light industry, heavy industry or financials industry groups for firm j in year t*

Control Variables:
- *Leverage$_{jt}$ = debt/total assets ratio*
- *Internationalisation$_{jt}$ = percentage international exposure*
- *Profit before tax$_{jt}$ = natural log of pre-tax profit for firm in year t*
- *a$_j$ = intercept*
- *β = estimated coefficient for each item or category*
- *ε$_j$ = error term*

The regression model tested the association between fair vale share-based payment or FVDI-FI for all sample firms and the independent variables of strength of corporate governance (CGS), firm size and industry group against the control variables of leverage, pretax profit and internationalisation. In relation to share-based payment, fair value disclosures, internationalisation and industry groups are statistically significant predictor variables. The positive association between FVDI-SP and internationalisation is consistent with the findings of Bassett *et al.* (2007) who discovered that US listed Australian firms provided more extensive ESO disclosures. The adjusted R square of 0.119 indicates that the independent and control variables explain 11.9 percent of share-based payment fair value disclosures by the top 100 Australian listed companies. In relation to fair value financial instrument disclosures, the strength of corporate governance structure is a significant predictor variable (p-value = 0.017). With regard to other independent variables, both leverage and profit before tax have significant explanatory power in determining the extent of financial instrument fair value disclosures. The control variables are not statistically significant. An adjusted R square of 0.134 is achieved indicating that only 13.4 percent of FVDI-FI is explained by the explanatory variables. In the case of both FVDI-SP and FVDI-FI, all VIF values are less than ten indicating that multicollinearity is not an issue. Scatterplots of residual values against predicted values of each of FVDI-SP and FVDI-FI indicate that heteroskedasticity is not of concern.

Regression analysis showed that corporate governance is a significant predictor of fair value disclosure in relation to financial instruments. As strength of corporate governance structure is measured using a score consisting of five attributes, further analysis was then undertaken to determine whether a particular corporate governance attribute significantly influences the disclosure of fair value information. Each of the corporate governance attributes was included separately as an independent variable in the regression analysis. Discrete corporate governance attributes were not significant predictors of fair value disclosures in relation to fair value share-based payment disclosures. However, there are three corporate governance attributes that were found to be positively and statistically significantly associated with financial instrument fair value disclosures (see Table 6): whether the company's risk management system is operating effectively and efficiently; existence of an audit committee charter; and existence of a formal written continuous disclosure policy. The results imply that companies that have an effective and efficient risk management system, audit committee charter and a formal written continuous disclosure policy in place will more

extensively disclose fair value information in relation to financial instruments compared to companies that do not have those governance attributes.

Table 5: Multivariate Results in Relation to Share-Based Payments and Financial Instruments Fair Value Disclosures

	FVDI-SP			FVDI-FI		
	Coefficients	*t Stat*	*P-value*	*Coefficients*	*t Stat*	*P-value*
Intercept	0.147	0.383	0.702	0.211	1.232	0.221
Corporate Governance	0.117	0.631	0.530	0.202	2.440	0.017**
Size	0.001	0.043	0.966	-0.008	-0.604	0.547
Internationalisation	0.255	2.780	0.007*	0.061	1.487	0.140
Leverage D/E	0.179	0.853	0.396	0.153	1.625	0.100***
Profit Before Tax	-0.010	-0.821	0.414	0.011	2.008	0.048**
Industry Groups	0.108	2.312	0.023**	-0.016	-0.784	0.435
	Model Summary	Observation	100	Observation	100	
		Adjusted R squared	0.119	Adjusted R squared	0.134	
		F Statistic	3.222	F Statistic	3.561	
		P-Value	0.006	P-Value	0.003	

Source: Original table.

Note: Two tailed test associations *, ** and *** are statistically significant at the 1%, 5% and 10% levels respectively.

Table 6 shows the results of the OLS regression by incorporating discrete corporate governance attributes separately in the regression model designed to test if there were significant associations with financial instrument fair value disclosures.

Table 6: Multivariate Results of Individual Corporate Governance Attributes in Relation to Financial Instruments Fair Value Disclosures

	Coefficients	*t Stat*	*P-value*
CG1: Independent Chairman	0.040	1.264	0.210
CG2: Dual Role	0.063	0.988	0.326
CG3: Risk Control	0.056	1.792	0.076
CG4: Audit Committee	0.104	1.765	0.081
CG5: Continuous Disclosure	0.085	2.237	0.028

Source: Original table.

Backward regression analysis did not enhance the relationship between the dependent variables and independent variables. However, the control variables comprising leverage and internationalisation were significantly related to fair value share-based payment and financial instrument disclosures. Additional logistic regression of valuation inputs for each of share-based payments and financial

instruments indicated that industry group was an influential predictor of disclosure of dividend information used to calculate fair value in relation to share-based payments while a positive and significant relationship was found for corporate governance and profit before tax in relation to the financial instruments attribute of credit risk.

Conclusions

Top 100 Australian listed firms mean FVDI-FI and fair value share-based payment disclosures are 49.17 percent and 65.70 percent respectively. The higher mean fair value disclosures in relation to share-based payment is likely to be due to the extensive disclosure requirements mandated under AASB 2 for measuring share-based payments at fair value. The higher standard deviation of fair value share-based payment disclosures is due to the fact that companies have widely different share-based payments arrangements leading to inconsistency in reporting. Companies therefore will use different methods and techniques when estimating fair value of share-based payments, in turn giving rise to widely varying disclosure levels. The fair value disclosure of financial instruments, on the other hand, showed a relatively low standard deviation implying that companies mainly disclose fair value information of a generic nature. Far less information concerning the inputs to the valuation model, which are critical in understanding how fair value was measured, is disclosed in relation to financial instruments.

Correlations and OLS multiple regression analysis was used to test the association of fair value disclosures and the independent variables of strength of corporate governance structure, firm size and industry groups. There were no significant associations between FVDI-SP and the independent variables. In particular, unlike recent studies (e.g., Bassett *et. al*, 2007), no association was found between FVDI-SP and corporate governance structure. However, strength of governance structure is a positive and significant predictor variable of FVDI-FI. The low adjusted R square values of the regression models suggest that other factors are important in influencing fair value disclosure patterns.

Variation of fair value disclosures largely relate to the paucity of information provided in the annual report covering the inputs of fair value valuation models. An objective of financial reporting is to provide decision-useful (relevant) information. However, the lack of disclosures relating to valuation inputs used to measure fair value suggests that stakeholders are missing out on potentially valuable information that could be provided in the annual report. Such valuation information could be potentially useful to sophisticated investors (analysts, for example) so they can make their own valuations, or for less sophisticated users so that they can make general investment decisions regarding the entity.

Appendix: Fair Value Disclosure Index Items

Share-Based Payment	AASB 2 Standard Reference
MANDATORY DISCLOSURES	
1. Fair value measurement method	47(a)i
2. Valuation techniques	47(a)i
3. Valuation Input-exercise price	45(b), 47(a)i
4. Valuation Input-expected life	47(a)i
5. Valuation Input-current market price of the underlying shares	47(a)i
6. Valuation Input-expected volatility	47(a)i
7. Valuation Input-expected dividends	47(a)i
8. Valuation Input-risk free interest rates	47(a)i
9. Valuation Input-market-based performance hurdles	47(a)i
10. Fair value source	47(a)iii
11. Fair value assumptions	47(a)i
12. Quantification of fair value changes	50

Financial Instruments	AASB 132 Standard Reference
MANDATORY	
1. Fair value measurement method	92(a)
2. Valuation techniques	92(b)
3. Valuation Input-interest rate	52(a)ii, 93
4. Valuation Input-credit risk	52(b), 93
5. Valuation Input-foreign exchange rates	52(a)i
6. Valuation Input-equity prices	90
7. Valuation Input-volatility	92(d)
8. Valuation Input-costs/premiums/discounts	92(d)
9. Valuation Input-commodity prices	52(a)iii
10. Fair value source	87
11. Fair value assumptions	52(a)ii
12. Quantification of fair value changes	92(d)

Source: Original table.

Note: Fair value items used to construct the fair value disclosure index in relation to share-based payments and financial instruments. A dichotomous score of one (1) is assigned to each item disclosed in the firm's annual report, otherwise zero (0) is assigned against that item. A FVDI-SP *and* FVDI-FI score is computed by summing all information items disclosed divided by the maximum number of items that could be disclosed (12).

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Notes

1 Fair value is defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's-length transaction (AASB, 2004a).

2 Financial instrument disclosures prior to formal IFRS adoption were required under Australian Accounting Standards Board (AASB) 1033 Presentation and disclosure of financial instruments (AASB, 1999). Following formal IFRS adoption, financial instrument disclosures were initially

required under AASB 132 Financial Instruments: Disclosure and Presentation. The disclosure requirements in AASB 132 have now been transferred to AASB 7 Financial Instruments: Disclosures leaving AASB 132 with presentation requirements only.

3 Broadly, this applies to: assets and liabilities actually held for trading; assets and liabilities designated at the outset by the company as at fair value through profit and loss; all derivative financial instruments; and any part of a hedged asset or liability where a fair value hedge is used (AASB, 2004b). Under AASB 139, both realised and unrealised gains and losses of derivative financial instruments will be measured and recorded at fair value in the balance sheet with changes in fair value recorded in the income statement or equity at financial year end.

4 Resource companies comprise oil and petroleum firms (energy) and mining (materials) firms. Resource stocks fall within the heavy industrial groups.

5 In most instances, firms with a foreign subsidiary had active overseas operations. In other cases, firms appeared not to have created a separate overseas subsidiary to manage their operations.

6 For instance, companies with foreign exchange transactions will have to consider hedging strategies for foreign exchange risk under AASB 139. Companies with extensive hedging programs, holding a large number of derivatives or with operations across a number of jurisdictions, are expected to disclose more information concerning financial instruments under IFRS in the annual report (KPMG, 2003; Ernst & Young, 2005).

7 Fair value changes in relation to share-based payments resulted in a mean increase in equity of AUD1.28m and a mean increase in expenses of AUD8.95m. Where disclosed, fair value quantification changes made in relation to financial instruments resulted in a mean increase in assets and liabilities of AUD73.81m and AUD291.60m respectively, and a mean decrease in equity and profit of AUD87.92m and AUD210.79m respectively.